TIMBER

Key Points

- Fiscal year 2008 had the highest volume sold and highest volume under contract since approval of the Revised Forest Plan (2004). The Farm Bill allowed stumpage prices to be reduced on high valued sales increasing harvest volume in 2008. Two sales (two million board feet (MMBF) received no bids.
- The SNF awarded 60 MMBF within twenty-three timber sales on 6,472 acres but actually harvested 32MMBF on 3,467 acres.
- To date, 223 MMBF (22%) of the Forest Plan first decade volume projection has been achieved and 13,370 acres have been harvested.
- Completed treatments combined with approved treatments not yet implemented encompass approximately 275 MMBF (27%) of the Forest Plan first decade harvest volume projection.
- During 2008, 4,629 acres were certified for successful forest regeneration.
- During 2008, approximately 41 percent of harvest acres were clearcut which compares to 58 percent in 2007, 60 percent in 2006 and 88 percent in 2005. On average, 62 percent of harvest acres have been clearcut annually since 2004, which is similar to the projection (63%) for the end of the first decade of the Forest Plan.

A. MONITORING AND EVALUATION

Forest Plan Direction – Timber activity and stewardship contracting

This monitoring was conducted to address Forest Plan Objective: O-TM-1 Provide commercial wood for mills in Northern Minnesota. Material is harvested from the National Forest to supply sawmills, veneer mills, paper mills, and mills constructing engineered wood products.

Monitoring Conducted

Timber Activity and Commercial Wood Harvest

At the end of each fiscal year (FY) databases on the Superior National Forest (SNF) are reviewed to determine the amount of acres treated, acres harvested, and timber volume harvested. Database sources include Combined Data System (CDS), Forest Activities Tracking System (FACTS), and Timber Information Managers (TIM). Vegetative treatments include even-aged and uneven-aged timber harvest, site preparation, reforestation, and mechanical fuel reduction. Harvest acres are those that are actually cut. Volume is the amount of timber removed through harvest measured by millions of board feet (MMBF).

To determine if implementation activities are achieving the first decade objectives or projections, the actual as well as planned accomplishments from National Environmental

Policy Act (NEPA) decisions are included. For this year's Monitoring and Evaluation (M&E) report, actual and planned volumes are evaluated because they are both disclosed in NEPA decisions and included in updated databases.

Stewardship Contracting
Eight stewardship units were monitored to determine whether they were harvested as planned.

Forest Plan Direction - Vegetative Treatments

This monitoring was conducted to address Forest Plan Projection: Forest Plan Table APP-D3 p.D-3 and FEIS Table 2-9 p2-31 clearcutting proportion in actual and proposed harvest treatments, Forest Plan Standard: S-TM-2 Harvest using even-age regeneration methods (clearcutting, seed tree, shelterwood) may create a temporary forest opening no larger than 1,000 acres in size, Forest Plan Objective: O-VG-20 Create large patch temporary openings up to 1,000 acres through management activities and Forest Plan Guideline: G-TM-7 A full suite of timber harvest practices will be allowed. Harvest practices will generally be selected because they provide the most appropriate strategy to achieve or optimize achievement of multiple use management objectives.

Monitoring Conducted

Proportion of Timber Harvest by Clearcut
The proportion of timber harvest methods in 18 sales was monitored and compared to the Forest Plan first decade estimate of what proportion of harvest would be through clearcutting versus other harvest treatments such as thinning, shelterwood and partial cut, or uneven-aged treatments (Forest Plan p. D-2). These 18 sales are from decisions made under the Revised Forest Plan (2004). Future monitoring reports will provide more information on the other treatment methods.

Large Patch Temporary Openings
The number and size of openings within 18 harvested sales were monitored. A temporary forest opening is any patch in the zero to nine years old age class, therefore current openings include not only those units harvested during 2008 but also any one to nine year old regeneration treatments that are adjacent to those units. The intent of this monitoring is not only to address the objective of creating openings no greater than 1000 acres but also to determine progress toward the Forest Plan objective of increasing interior forest over time while still retaining a range of small patches.

Silvicultural Prescriptions
Monitoring field trips or Ranger District site visits occurred within at least six project areas. The purpose of these was to validate if prescriptions were implemented as planned and to determine the reasons for success or failure. Detailed summaries and findings from these visits can be found in Appendix A and in the project file.

Vegetative Response of Older Sales

Vegetation surveys, within harvest units from three to 11 years ago, were completed in the Metro Plus project area in 2008. This, in conjunction with similar visits to older treatments during 2006 and 2007, allowed the SNF to assess how vegetation responds to management treatments over time. Regeneration success (planted and natural regeneration) and vegetation frequency and cover were measured.

Analysis of these data will provide managers and resource specialists with insight on how landscapes respond to management actions. Detailed summaries and conclusions from these visits can be found in Appendix A and in the project file.

Restocking

Restocking certification was completed during FY 2008 which included the following measures: acres that need to be certified for stocking, final harvest acres that need to be certified, acres certified as adequately stocked and acres not yet certified as adequately stocked.

Compliance with Timber Project Standards, Guidelines and Design Features

Monitoring field trips, Ranger District site visits, and sale administrator inspections occurred within seven project areas to assess the compliance with Forest Plan standards and guidelines and project design features. Reforestation, leave trees and reserve patches, snags, soils (including shallow Ecological Land Type (ELT) 18), visuals, recreation, roads, non-native invasive species (NNIS), and wildlife were all monitored. Similar field visits were completed in 2006 within the Virginia Project area and in 2007 in the Griddle treatments within the Dunka project area. Together, these visits allow assessment of the various management techniques. Detailed summaries and conclusions from these visits can be found in Appendix A and in the project file.

Evaluation and Conclusions -Timber activity and stewardship contracting

Timber Activities and Commercial Wood Harvest

FY 2008 timber harvest and volume accomplishments are shown in Tables 6.1 and 6.2.These accomplishments are based on 23 timber sales planned and sold under both the 2004 Revised Forest Plan and the 1986 Forest Plan. The difference between awarded and actual volume and treatment acres can be attributed to a continued downturn in the timber market.

To date, 223MMBF (22%) of the first decade volume projection has been completed and 13,370 acres have been harvested. When these actual accomplishments are combined with all volume and acres that are currently planned or under contract to be harvested in the future, volume would be approximately 275MMBF (27%) of the first decade harvest volume projection.

Stewardship Contracting

Eight units (162 acres) awarded during FY 2007 were harvested during FY 2008. Seven of the units were clearcut. Sale administrator inspections showed that contract terms, conditions, and specifications were met.

Evaluation and Conclusions –Vegetative Treatments

Proportion of Timber Harvest Method

The proportion of timber that was clearcut (compared to other timber harvest methods) between 2005 and 2008 is displayed in Figure 6.3. During 2008, the proportion of all timber harvest methods implemented included the following: clearcut 41 percent, thinning 59 percent, removal cuts 10 percent, seed cuts one percent and sanitation cuts less than one percent. The clearcut proportion of 41 percent compares to 58 percent clearcut in 2007, 60 percent in 2006 and 88 percent in 2005. When planned harvests are included with actual harvests, approximately 62 percent of timber harvests have been clearcut since 2005. This is consistent with the Forest Plan first decade projection of 63 percent.

Large Patch Temporary Openings

Regeneration harvests, in combination with adjacent young stands (one to nine years old), constitute a temporary opening or young patch. Temporary openings greater than 300 acres from 2004 to 2008 are shown in Table 6.3. When 2005 to 2008 project decisions are fully implemented, there will be 21 temporary openings greater than 300 acres for a total of approximately 21,615 acres. The large increase in the number and acreage of large patches during 2008 occurred within the Gunflint corridor. This increase is attributed to openings created by the Ham Lake wildfire, particularly those openings adjacent to salvage logging units created eight to nine years ago as a result of the 1999 blowdown. The increase in number of large patches is consistent with the desired condition for the first decade of the Forest Plan.

Silvicultural Prescriptions

Monitoring field trips or Ranger District site visits occurred within at least six project areas. Some of the concerns raised and conclusions drawn from the field reviews included the following:

- A residual 60 sq ft/ac seemed reasonable to improve the current stand without going into a regeneration prescription (50 square feet of basal area)
- Shelterwood harvests without final over-story removal are a good tool in converting stands into a two-aged structure
- Birch regeneration objectives are not being met in some units because inadequate scarification has prevented seedlings from successfully seeding in and because of lack of follow-up timber stand improvement (TSI) practices to reduce competition from other tree species.

Vegetative Response of Older Sales

Vegetation surveys conducted over the past three years within units that were harvested three to 11 years ago revealed the following:

- Black spruce seedlings within eight to 10 year old stands were more abundant than fifth year restocking surveys revealed. The greater spruce abundance is likely due to the seedlings growing taller and therefore becoming more visible after three to five growing seasons.
- Undesired naturally regenerating species such as red maple and shrubs dominated stands three to four years following plantings of desired tree species. This highlights the need for TSI beyond the fifth year restocking surveys. There is a need to authorize KV funding for TSI work up to ten years after reforestation.
- Tree growth, on older harvested ELT 18 sites, was shorter and smaller in diameter than trees on adjacent more productive ELT's. However there is productivity variability across ELT 18 possibly due to different parent material or Land Type Association (LTA).
- Successful regeneration of pine, aspen, and other species within the Griddle/Rusty Diamond sale area was found post-treatment in eight of 14 units. Regeneration success was not recorded within the other six units. Table A.3 in Appendix A displays specific monitoring conclusions for the Griddle/Rusty Diamond timber sale units.

Restocking

During FY 2008, 2,616 acres were certified as restocked per Forest Plan standards. In addition, 3,623 acres were harvested but not yet certified as of September 30, 2008. The balance of harvested acres that need certification is 3,748 (Table 6.4). The Forest is meeting the National Forest Management Act (NFMA) obligation to adequately restock within five years following final harvest. Fifth year stocking surveys under the Revised Forest Plan (2004) are to begin in FY 2009. Further evaluation and discussion of stocking recertification status and achievement will occur in the FY 2009 M&E Report.

Compliance with Timber Project Standards, Guidelines and Design Features

The following discussion highlights conclusions from monitoring various resources within eight projects. These conclusions represent only a sample of the vegetative projects implemented during the past several years and do not necessarily represent conditions within all completed projects. However, this monitoring will provide insight on successes and failures of standards, guidelines and design feature practices which can be incorporated into future projects. A more thorough discussion on this can be found in Appendix A.

Overall compliance with standards, guidelines, and project design features was observed within all the project areas monitored. The topics reviewed and conclusions drawn from this monitoring include the following:

Legacy patches, reserve trees, snags and coarse woody debris (Dunka and Nira project areas)

- Reserve-legacy patches were at least five percent of the stand and coarse woody debris represented about six percent of the units.
- On average, nine reserve trees per acre and 15 snags per acre remained.
- Placing legacy patches along creek edges helped mitigate potential impacts to water quality.
- Reserve trees (particularly spruce) become subject to windthrow following vegetative treatments. Arranging leave trees in clumps rather than individual trees would help mitigate windthrow.

(Forest Plan Guideline G-TM-5 and Dunka Environmental Assessment (EA) vegetation design features (Appendix A).

Sensitive plants (Dunka project area)

- Protection measures in timber sale contracts were successful in keeping logging activities off areas containing rare plants.

(Dunka EA WL and rare plants design features (Appendix A).

Scenic quality (Griddle/Rusty Diamond, Dunka, Nira, and Tomahawk project areas)

- Visual quality objectives were met on all units in the Griddle area.
- Four of seven units retained slash free zones near roads in the Nira area. Visual quality objectives were met.
- Visual design features along trails should be comparable to practices along roads (i.e., leaving clumps and islands rather than a buffer strip).
- The trail visual buffer had insufficient under-story vegetation during the winter in the Dunka area.

(Forest Plan Guidelines; G-SC-5, 6, and 7 and Dunka EA scenic quality design features (Appendix A).

Recreational Motor Vehicles (RMV's), temporary road closures, skid trails and landings (Griddle/Rusty Diamond, Dunka, and Nira project areas)

- RMV use was observed in two of 14 units in the Griddle/Rusty Diamond project area. It is unknown if RMV use was occurring prior to the management activities or if harvesting and road building provided access into the areas. The RMV use did not extend into the Boundary Waters Canoe Area Wilderness (BWCAW).
- Road closures were effective in preventing motorized use.
- No erosion resulting from skid trails and landings was observed.
- Placement of boulders and root wads was not visually appealing. Boulders and root wads should be partially buried in future projects.

(Forest Plan Standards & Guidelines; S-TS-3 and G-TS-13 and Dunka EA temporary road design features (Appendix A).

Soils and wetlands (Dunka, Echo Trail, Griddle-Rusty Diamond, Nira, and other project areas)

- Tree tops were scattered on sites with shallow soils and rutting was noted in only one of seven sales units (14% of visits) in the Nira area.

- No wetland impacts (rutting, debris left in wet areas, sedimentation) were observed within any of the 14 units inspected in the Griddle/Rusty Diamond area.
- The fourteen sites visited in the Griddle/Rusty Diamond area were well mitigated to protect water resources and ameliorate any temporary intrusions resulting from silvicultural activities.
- We should consider designating all five acre or greater ELT 18 sites as Land Suitability Class 700 (unsuitable for timber management) until they meet minimum productivity standards (at least 20 cu ft/ac/yr), they can be successfully regenerated to Forest Plan standards within five years of final harvest and the irreversible damage to long-term productivity does not occur.

(Forest Plan Guidelines; G-WS-9, 11 and 14 and Dunka EA riparian-wetland and soils design features (Appendix A).

Non Native Invasive Species (NNIS plants) (Griddle/Rusty Diamond, Wadrop, Butterfly & Nira project areas)

- NNIS were observed within four of 19 units in the Griddle/Rusty Diamond area and none of the infestations were expanding into the BWCAW.
- Timber operation influence on NNIS establishment and spread was variable in the Wadrop and Butterfly areas. In some units NNIS species were likely established prior to harvesting while in other units (Butterfly sale) skid trails and temporary roads did encourage NNIS occurrence.

(Forest Plan Guidelines; G-WL-23 and Dunka EA NNIS design features (Appendix A).

B. MANAGEMENT CONSIDERATIONS

Follow-up timber stand improvement (TSI) projects, beyond the fifth year restocking surveys, may be needed since many non-commercial plant species dominate stands following replanting.

Visual design features should be implemented along recreational trails similarly to those implemented for roads (i.e., leaving clumps and stands rather than buffer strips).

6.8 Timber

Table 6.1. Fiscal year 2008 timber acres and volume sold and harvested. These figures include sales planned and sold under the 1986 Forest Plan as well as the 2004 Revised Forest Plan.

Revised Forest Plan Maximum Estimated Annual Outcome		Sold		Harvested	
MMBF	Acres	MMBF	Acres	MMBF	Acres
102	13,200	60	6,472	32	3,467

Table 6.2. Fiscal year 2008 Timber volume and treatment acres approved in 2008 NEPA Decisions on the Superior National Forest.

Estimated Volume MMBF	Estimated Treatment Acres	Number of NEPA Documents
9,129	1,576	3

Table 6.3. Temporary Openings Greater Than 300 Acres on the Superior National Forest.

Year	Actual Accomplishment and Approved NEPA	
	Number of Patches >300 Acres	Acres
2004	NA	NA
2005	8	4,218
2006	0	0
2007	8	3,485
2008	21	21,615
2014 Desired Condition	Increase	Increase

Table 6.4. Restocking certification acres on the Superior National Forest for fiscal year 2008.

Acres to be certified for stocking [1]	Additional acres to be certified (final harvests) [2]	Acres certified as being adequately stocked [3]	Balance of acres to be certified as adequately stocked
2,741	3,623	2,616	3,748

[1], [2] Source = Fiscal year 2008 Annual Reforestation Needs Report

[3] Source = FACTS web report dated 04 Feb, 2008 querying FACTS codes 4381,4382 and 4383 for fiscal year 2008

Figure 6.1 Volume of timber harvested on the Superior National Forest from 2005 to 2008.

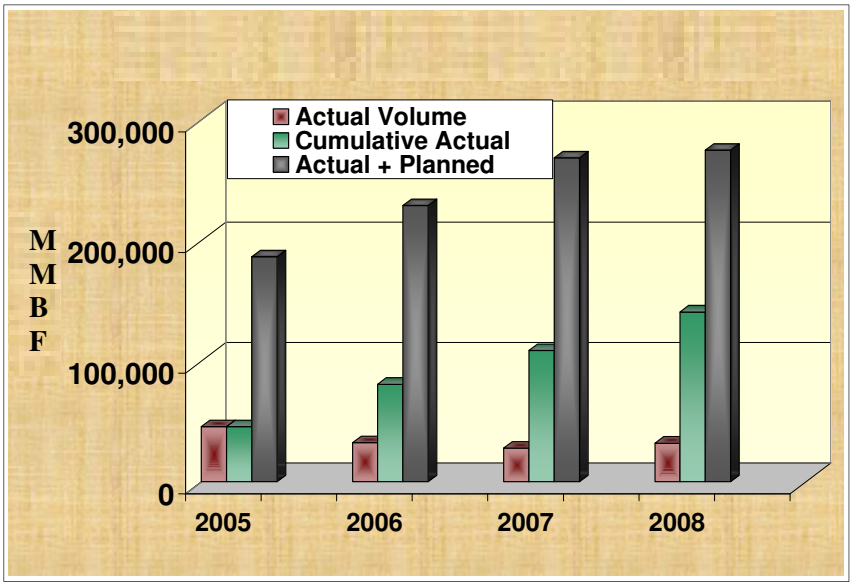

Figure 6.2 Acres of timber harvested on the Superior National Forest from 2005 to 2008.

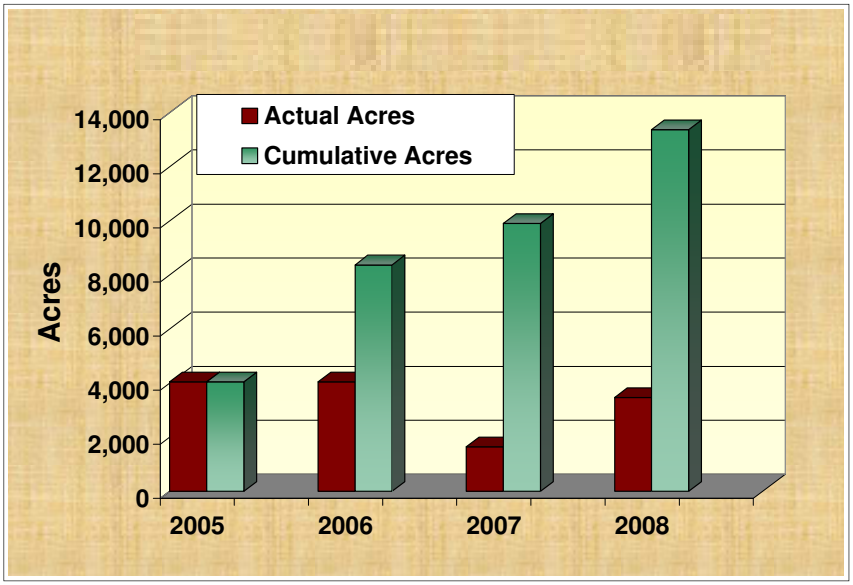

Figure 6.3. Proportion of timber that was clearcut on the Superior National Forest from 2005 to 2008. The Forest Plan estimate for the first decade is that 63 percent of timber harvest acres would be clearcut (Forest Plan p. D-2).